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| APPLICATION NO.         | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-------------------------|-------------|----------------------|---------------------|------------------|
| 10/676,290              | 09/30/2003  | Xin Chen             | SP03-135            | 7067             |
| 22928                   | 7590        | 06/15/2005           | EXAMINER            |                  |
| CORNING INCORPORATED    |             |                      | HUGHES, JAMES P     |                  |
| SP-TI-3-1               |             |                      | ART UNIT            | PAPER NUMBER     |
| CORNING, NY 14831       |             |                      | 2883                |                  |
| DATE MAILED: 06/15/2005 |             |                      |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                 |              |
|------------------------------|-----------------|--------------|
| <b>Office Action Summary</b> | Application No. | Applicant(s) |
|                              | 10/676,290      | CHEN ET AL.  |
|                              | Examiner        | Art Unit     |
|                              | James P. Hughes | 2883         |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on 30 September 2003.  
 2a) This action is **FINAL**.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 1-16 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-12 and 14-16 is/are rejected.  
 7) Claim(s) 13 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 30 September 2003 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 2-13-04 5-23-05.

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 1-8, 11, 12, and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hart Jr. et al, (5,418,881) in view of Cocchini et al. (2004/0081412). Hart teaches an optical fiber (and corresponding method of manufacturing) having low PMD – e.g. less than 0.5 ps/km<sup>1/2</sup>, which is achieved by impressing a spin on its longitudinal axis that is alternatively clockwise and counterclockwise. (see e.g. Col. 2, ll. 30-65) Following, it is taught that beneficial results may be seen from varying the spatial spin frequency – thus there will be a

minimum and maximum spin reversal distance. (See e.g., Col. 3, ll. 25-35) Additionally, the spin repeat distance is taught to be at least 20 km. (See e.g. claim 1)

However, Hart does not explicitly teach that the fiber's beat length is greater than 0.5 meters. Since it is known that beat lengths are typically in the range from 1m to 100m – as taught by Cocchini et al. (2004/0081412) see e.g. paragraph 101 – it would have been obvious to one of ordinary skill in the art at the time of the invention to choose a beat length ranging from 0.5 meters to greater than 10 meters in the invention of Hart. One would have been motivated to do so because it would allow optimization of the chosen functional parameters.

Regarding claims 4-8, and 16; while Hart teaches that the spin repeat distance may at least 20 meters. However Hart does not explicitly teach that the spin repeat distance may be between 50 and 200 meters. It would have been obvious to one of ordinary skill in the art at the time of the invention to select a spin repeat distance between 50 and 200 meters since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 R. 2d, 205 USPQ (CCPA 1980)

2. Claims 1, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hart Jr. et al, (5,418,881) in view of Cocchini, in further view of Conradi et al. (6,430,346). Hart in view of Cocchini teaches an optical fiber (and corresponding method of manufacturing) as discussed above.

However, Hart in view of Cocchini does not explicitly teach the relative index of refraction of various core segments.

Conradi et al. (6,430,346) teaches a negative dispersion single mode waveguide fiber with a relative index of refraction profile of three consecutive core segments following 1>3>2. Conradi teaches that such core segment profiles are advantageous for negative PMD dispersion after a PMD induced by fiber amplification. (See e.g. Col. 7 ll. 37-65 and Fig. 2)

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ a relative index of refraction profile of three consecutive core segments as taught by Conradi in the invention Hart in view of Cocchini because this would yield efficient negative PMD dispersion as taught by Conradi. One of ordinary skill in the art would have been motivated to do so because this would allow for PMD compensation after fiber amplification without inducing any further PMD.

#### *Allowable Subject Matter*

3. Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter. Claim 13 would be allowable if rewritten in independent form including all of the limitations of its base claim because the prior art of record fails to teach, or fairly suggest, a means for or a method of making an optical fiber wherein the ratio of the maximum spin reversal distance divided by the spin repeat distance is less than 0.5; in combination with the other limitations in the claim and its base claim.

#### *Conclusion*

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

It is noted that Chen et al. (2003/0152348) reads on at least claims 1 and 11. (see paragraphs 11-14 and claims 1-17) The reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). A rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Evans et al. (5,704,960) and Garner et al. (2004/0017986) both teach low PMD fibers.  
(Abstracts)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James P. Hughes whose telephone number is 571-272-2474. The examiner can normally be reached on Monday - Friday 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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